

**U.S. FISH AND WILDLIFE SERVICE  
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM**

SCIENTIFIC NAME: Pituophis ruthveni

COMMON NAME: Louisiana pine snake

LEAD REGION: 4

INFORMATION CURRENT AS OF: October 2005

**STATUS/ACTION:**

☐ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status

☐ New candidate

☒ Continuing candidate

☐ Non-petitioned

☒ Petitioned - Date petition received: 7/20/2000 (2<sup>nd</sup> petition)

☐ 90-day positive - FR date:

☐ 12-month warranted but precluded - FR date:

☐ Did the petition request a reclassification of a listed species?

**FOR PETITIONED CANDIDATE SPECIES:**

a. Is listing warranted (if yes, see summary of threats below)? yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded. We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations, and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (<http://endangered.fws.gov/>).

☒ Listing priority change

Former LP: 5

New LP: 8

Date when the species first became a Candidate (as currently defined): 10/01/1999

     Candidate removal: Former LP:     

     A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

     U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

     F – Range is no longer a U.S. territory.

     I – Insufficient information exists on biological vulnerability and threats to support listing.

     M – Taxon mistakenly included in past notice of review.

     N – Taxon does not meet the Act's definition of "species."

     X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Reptile – Colubridae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: LA & TX

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:  
LA & TX

LAND OWNERSHIP: Ownership of lands within the Louisiana pine snake's historical range include approximately 30 percent Federal (15 percent of which is on the Kisatchie National Forest and Fort Polk in Louisiana; with the remaining 15 percent on the Angelina and Sabine National Forests in Texas) and 70 percent in private ownership (approximately 40 percent in Louisiana, and 30 percent in Texas).

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LEAD FIELD OFFICE CONTACT: Lafayette, Louisiana Field Office, Jack Culpepper, 337/291-3123, Jack\_Culpepper@fws.gov

## BIOLOGICAL INFORMATION

### Species Description

Pine snakes (genus Pituophis) are large, short-tailed, powerful constricting snakes with keeled scales, a single anal plate (the scale covering the cloaca) and disproportionately small heads (Conant and Collins 1991). Their snouts are pointed and they are good burrowers. The Louisiana pine snake (P. ruthveni) has a buff to yellowish ground color with dark brown to russet dorsal blotches covering its total length (Conant and Collins 1991, Vandeventer and Young 1989). The belly of this pine snake may be unmarked or boldly patterned with black markings. It resembles a rather heavy-bodied bullsnake (P. melanoleucus sayi), but differs from this species by having less dorsal blotches (40 or

less). The Louisiana pine snake is variable in both coloration and pattern, but a characteristic feature is that its body markings are always conspicuously different at opposite ends of its body. Blotches run together near the head, often obscuring the ground color, and then become more separate and clear-cut towards the tail. Typically, there are no noticeable head markings, although rarely a light bar or stripe may occur behind the eye. The length of adult Louisiana pine snakes ranges from 48 to 56 inches (122 to 142 centimeters) (Conant and Collins 1991).

### Taxonomy

Stull (1929) formally described the Louisiana pine snake as a pine snake subspecies (P. m. ruthveni) based on two specimens taken in Rapides Parish, Louisiana. Reichling (1995) reassessed this snake's taxonomic status and concluded that it is a valid evolutionary species, both geographically isolated and genetically distinct. The Louisiana pine snake has subsequently been accepted as a full species, P. ruthveni (Collins 1997, Crother 2000). We have carefully reviewed the taxonomic research for the Louisiana pine snake and conclude it is a valid taxon.

### Habitat

Louisiana pine snake habitat consists of longleaf pine savannah with sandy, well-drained soils and substantial herbaceous ground cover. Baird's pocket gophers (Geomys breviceps) are an essential component of this habitat. They create burrow systems where Louisiana pine snakes are most frequently found and are a major source of food for the species (Rudolph and Conner 1996). Movement patterns of pine snakes are typically from one pocket gopher burrow system to another (Rudolph in litt. 1997).

### Historical Range/Distribution

The Louisiana pine snake historically occurred in portions of west-central Louisiana and extreme east-central Texas. This area roughly coincides with a disjunct portion and the most westerly occurrence of the longleaf pine ecosystem situated west of the Mississippi River. The range of the Louisiana pine snake included parts of 7 parishes in Louisiana and 15 counties in Texas (Jennings and Fritts 1983, Rudolph 2000, Rudolph et al. 2003). Records from two additional parishes in Louisiana (Williams and Cordes 1996) are considered suspect and have not been included in the historical records database (S. Shively, Louisiana Natural Heritage Program, pers. comm. 1999). Historical records (those prior to 1990) are few, and only two specimens were known prior to collections made in the late 1940's (Wright and Wright 1957). Unfortunately, much of the Louisiana pine snake habitat loss occurred in the early 1900's, prior to those surveys. In fact, most of the sandy longleaf pine dominated savannahs preferred by the Louisiana pine snake had disappeared by the mid-1930's (Bridges and Orzell 1989, Frost 1993).

### Current Range/Distribution

Louisiana pine snakes have not been documented in over a decade in some of the best

remaining habitat within their historical range (Rudolph, pers. comm. 1999; S. Shively, pers. com. 1999). This suggests that the species is no longer present, or extremely rare, in portions of its previous distribution. Surveys documenting the current condition of the fire climax longleaf pine forests, and results of Louisiana pine snake trapping and radio-telemetry, suggest that extensive population declines and local extirpations have occurred during the last 50 to 80 years (Rudolph in litt. 1997). Records of the Louisiana pine snake from 1990 to the present include localities in: Bienville, Natchitoches, Sabine, and Vernon parishes in Louisiana; and Angelina, Jasper, Newton, Sabine, and Tyler counties in Texas. Trapping data suggest that the largest population occurs on industrial forest land in Bienville Parish, Louisiana. The habitat for that population is considered excellent and supports a widespread pocket gopher population. The pine forest is mature with sandy, well-drained soils, a history of prescribed fire, and an understory that contains at least 50% herbaceous cover. Although much of this habitat is currently natural second-growth stands, it could be converted into short-rotation pine plantations that are generally less suitable for Louisiana pine snakes.

#### Population Estimates/Status

The Louisiana pine snake is recognized as one of the rarest snakes in North America (Young and Vandeventer 1988). Rudolph (2000) conducted a habitat assessment of all known historical localities of the Louisiana pine snake. Although most of the historical collecting sites are difficult to relocate due to vague locality information, Rudolph felt limited inaccuracy in locating sites should not invalidate overall conclusions about habitat quality. Also, Rudolph made the assumption that viable populations of Louisiana pine snakes are dependent on habitat at the scale of several kilometers (miles). That assumption was based on the habitat requirements, and the distribution, abundance, and home range of the Louisiana pine snake. Rudolph, therefore, evaluated habitat within a 2 kilometer (km) (1.24 mile (mi)) radius of the vicinity where a locality was thought to occur. Percent forest cover, percent herbaceous cover, soil type, and the presence or absence of pocket gophers was recorded for each site. Each locality was categorized as excellent, good, marginal, or poor based on this characterization and habitat preferences of the Louisiana pine snake. Rudolph found that 75% of the localities remained in a landscape that was primarily natural forest and, therefore, scored predominately in one category. Using this methodology, a total of 75 localities were assessed. Of these, the habitat in only 26 (35%) was considered capable of supporting a viable population of Louisiana pine snakes.

The Louisiana pine snake is a rare species and difficult to trap in the field. Rudolph et al. (2003) conducted extensive trapping at 14 sites in 10 counties in Texas and at 9 sites in 5 parishes in Louisiana that were identified as having the best remaining habitat for Louisiana pine snakes. Trapping was conducted in some areas for 1 year and in others for as long as 5 years, in an attempt to capture snakes for use in radio-telemetry research. Only 26 snakes were trapped in over 98,000 trap days (1 snake/3,775 trap days) from two areas in Louisiana and three areas in Texas. These data suggests that extant populations are very small. In addition, due to habitat fragmentation, the populations are restricted to isolated remnant patches of suitable habitat (Rudolph et al. 2003). These data should be

considered when using the following population estimates and drawing conclusions concerning the viability of these populations.

A population is defined here as a record of the species from 1990 or later. Records located within 2 km (1.24 mi) of each other are considered to be the same population. Using the results of Rudolph (2000), it can be estimated that there are 26 extant populations of Louisiana pine snakes. Twenty-one of these populations occur in Louisiana and five in Texas. Eighteen of the 26 (69%) are located in habitat capable of supporting a viable population. The populations are distributed across 3 widely separated areas in 4 parishes in Louisiana and 3 widely separated areas of 4 counties of Texas. Survey results in 2003 indicated the Texas populations may be in immediate danger of extinction (Rudolph pers. comm. 2003). Actions reported at the 2005 conservation meeting addressed conservation actions taken in Texas on the Angelina National Forest where accomplishments benefiting the Louisiana pine snake included 7,600 acres of prescribed burns, 1,100 acres of midstory removal, 69 acres of thinning and closure of 5 roads within the Louisiana pine snake conservation area.

## THREATS

### A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Both the quantity and quality of longleaf pine savannah have declined sharply in Louisiana and Texas. Virtually all remaining virgin timber in the south was cut during intensive logging from 1870 to 1920 (Frost 1993). In the 1920's, foresters began converting unmanaged woodlands to pine plantations (Frost 1993). Wahlenberg (1946) estimated that in 1935, 1.2 million hectares (approximately 3 million acres) of longleaf pine forests remained in southwest Louisiana and southeast Texas. However, 43 percent of these longleaf pine forests consisted of clear-cuts and only 2.9 percent were uncut old-growth stands. Bridges and Orzell (1989) used published data from the 1980's to improve current estimates of the natural longleaf pine forests remaining in Louisiana and Texas. They estimated that only 15 percent and 7.5 percent, of the 1935 acreages remained, in Louisiana and Texas, respectively. The quality of remaining Louisiana pine snake habitat has been degraded due to logging, fire suppression, short-rotation silviculture, and grazing.

The quality of Louisiana pine snake habitat has continued to be a concern on Federal lands in Louisiana and Texas in recent decades due to midstory encroachment and high stand density. These factors have limited solar penetration required to support healthy herbaceous vegetation on the ground layer; a primary characteristic of a healthy longleaf pine ecosystem. This herbaceous cover is necessary to support the Baird's pocket gopher; the primary food source for the Louisiana pine snake. (Rudolph, D.C., USFS Southern Research Station, Nacogdoches, TX, pers. comm. 2005).

The Bienville Parish population of Louisiana pine snakes, arguably the largest extant population, occurs on industrial forest land where the current saw timber stands are being

harvested (Rudolph in litt. 1999). Depending on future silvicultural practices, this habitat could be substantially degraded within a few years.

As noted below under “Conservation Measures Planned or Implemented,” the threats discussed above are being actively addressed by formal partners to the Candidate Conservation Agreement, and other interested parties.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Take of Louisiana pine snakes for commercial, recreational, scientific, or educational purposes is not currently considered to be a threat. However, the low number of Louisiana pine snakes makes them vulnerable to unscrupulous collectors should locality data become available.

C. Disease or predation.

Disease or predation is not currently considered to be a threat.

D. The inadequacy of existing regulatory mechanisms.

The Louisiana pine snake is listed as threatened by the state of Texas and protected from unauthorized collection. This regulation does not alleviate the loss of habitat which has caused the decline of the species. There is no protection for the Louisiana pine snake in Louisiana (S. Shively, Louisiana Natural Heritage Program, pers. comm. 1999); however as of 2005, discussions with the State’s Natural Heritage Program are ongoing regarding possible State listing, or other forms of protection that would enhance protection within Louisiana.

E. Other natural or manmade factors affecting its continued existence.

The longleaf pine savannas occupied by Louisiana pine snakes have historically been maintained by fire. Periodic burning promotes herbaceous vegetation and the presence of pocket gophers, and inhibits a shrubby midstory. Pocket gophers are a major prey item for the Louisiana pine snake and are also the creators of burrows used extensively by the snakes (Rudolph and Conner 1996). Fire suppression decreases the quantity and quality of habitat available for pocket gophers. Rudolph et al. (2002), suggests that this alteration of the fire regime has resulted in successional loss of herbaceous vegetation and consequent declines in pocket gopher populations. Habitat surveys conducted by Rudolph (pers. comm. 1999) indicate that changes in fire regimes may also represent the greatest threat to Louisiana pine snake habitat quality in recent years. The use of prescribed burning as a management tool is being restricted by many foresters due to numerous factors, including liability issues, smoke management issues, limited funds and personnel, and potential legal issues. The best remaining Louisiana pine snake population occurs on industrial forest land where burning has been conducted historically.

In the future it is likely that burning will be replaced, at least partially, by herbicide use on many forest properties. This is due to factors listed above, and the recent refinements in silvicultural practices that employ intensive use of herbicides and fertilizers to suppress herbaceous vegetation and shorten rotation lengths. Additionally, off-site pine species, which are more easily damaged by fire, are being planted instead of longleaf pine. The effects of these changes are unknown at present. If herbicide use alters the composition and/or density of the ground cover vegetation and pocket gophers decline in response, it is likely that Louisiana pine snakes will decline in numbers as well. Rudolph (in litt. 1999) trapped in poor quality habitat to determine use of these areas by Louisiana pine snakes. These habitats were degraded primarily as a result of fire suppression and the resultant excessively vegetated midstory. No snakes were captured in over 4,000 trap days.

Vehicle mortality, both on state roads and off-road trails, may cause significant impacts to the Louisiana pine snake's population numbers and community structure. Rudolph (et al. 1999) documented the death of 12 snakes from his radio-telemetry study. Three of the 12 (25 %) could be attributed to vehicle mortality. Roads with moderate to high traffic levels reduce adjacent snake populations by 50 to 75 percent and measurable impacts extend up to 850 meters (approximately one-half mile) from the roads (Rudolph et al. 1999, Rudolph in litt. 1997).

The Louisiana pine snake has an extremely low reproductive rate. It produces a very small clutch of 3 to 5 large eggs (T. Vandeventer, pers. comm. 1999). This low fecundity (reproductive output) magnifies the effect of the above listed threats and increases the likelihood of local extinctions.

#### CONSERVATION MEASURES PLANNED OR IMPLEMENTED

The Candidate Conservation Agreement (CCA) for the Louisiana pine snake between the Fish and Wildlife Service, U.S. Forest Service, U.S. Department of Defense, Texas Parks and Wildlife Department, and Louisiana Department of Wildlife and Fisheries was completed in 2003 and is currently being implemented. The CCA is designed to identify and establish management for the Louisiana pine snake on federal lands in Texas and Louisiana, and provides a means for all the partnering agencies to work cooperatively on projects that avoid and minimize impacts to the snake. It also sets up a mechanism to exchange information on successful management practices and coordinate research efforts. Several private landowners previously indicated interest in becoming signatories to the CCA or similar type agreements with the Service. As of October 2005 no formal agreements have been made with private landowners; however they continue to be actively involved in the process.

Federal partners to the CCA manage land representing approximately 30 percent of the historic range of the Louisiana pine snake. These partners are addressing habitat threats through pro-active land management including midstory removal, thinning and burn programs aimed at restoring the Louisiana pine snake and the longleaf pine ecosystem within its former range. As an example of the significant efforts being applied, the

Kisatchee National Forest in Louisiana, consisting of approximately 604,000 acres, has an active burn program averaging approximately 120,000 acres per year. These results account for both dormant and growing season burns, however due to the increased effectiveness for maintaining the longleaf pine ecosystem and Louisiana pine snake habitat, growing season burns have received increased emphasis in recent years. In 2001 and 2002, growing season burns accounted for 21,000 acres and 14,000 acres respectively, whereas in 2004 and 2005 more than 42,000 acres were burned annually during the growing season. Through this level of cooperation and proactive management, habitat loss within the range of federal lands is being actively addressed in concert with the CCA. Actions taken in Texas on the Angelina National Forest, and reported at the 2005 conservation meeting, included 7,600 acres of prescribed burns, 1,100 acres of midstory removal, 69 acres of thinning and closure of five roads within the Louisiana pine snake conservation area.

In 2001, the Service provided funds, through the Endangered Species Private Landowner Incentive Program, to the International Paper Company (IP) for habitat restoration and prescribed burning at Louisiana pine snake sites on their property. A habitat management plan for those sites was developed, and in August of 2005, IP was awarded a \$45,400 Private Stewardship Grant for habitat improvement on the Bienville Parish property.

In March 2004 and August 2005, conservation workshops for the Louisiana pine snake were hosted by the Audubon Zoo, in New Orleans, Louisiana and by the U.S. Forest Service in Natchitoches, Louisiana respectively. These conservation workshops were attended by Federal and state agencies, researchers, and representatives from the forest industry and The Nature Conservancy to discuss issues and threats to the Louisiana pine snake, identify possible strategies to deal with them, and discuss and share successful results. A number of important conservation issues were discussed at these meetings including; 1) the captive propagation program and associated research begun at the Memphis Zoo, 2) current field research and needs, 3) existing trapping methods and potential enhancements to increase effectiveness, 4) impacts resulting from all terrain vehicle (ATV) use on public lands where designated use areas are being employed to concentrate ATV use in areas unlikely to support the Louisiana pine snake, and 5) educational outreach efforts aimed at public acceptance and conservation of reptiles as a natural component of the longleaf pine ecosystem.

**SUMMARY OF THREATS** (including reasons for addition or removal from candidacy, if appropriate)

The Louisiana pine snake is listed as a candidate species indicating the Service has sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened. The summary below indicates that significant threats to the Louisiana pine snake continue to support the ranking as a candidate species.

Limited amounts of quality longleaf pine habitat within the range of the Louisiana pine snake is the primary threat to the species. This results from historic loss, but also from current-day silvicultural practices that are inconsistent with conservation of the longleaf



pine ecosystem. The quality of Louisiana pine snake habitat has continued to be a concern on federal lands in Louisiana and Texas which comprise 30% of the Louisiana pine snake's historical range. In recent decades, the quality of these ecosystems has declined due to midstory encroachment and high stand density. These factors have limited solar penetration required to support healthy herbaceous vegetation on the ground layer; a primary characteristic of a healthy longleaf pine ecosystem, and synonymous with the use of fire.

A variety of silvicultural practices have detrimental effects to the persistence of the longleaf pine ecosystem and the wildlife it supports including; planting of off-site pine species, limited or nonuse of prescribed fire, and use of herbicides rather than fire to manage midstory and ground layer vegetation.

Private lands comprise approximately 70% of the historical range of the Louisiana pine snake and generally are not managed to support the longleaf pine ecosystem and its characteristic herbaceous layer. Without a healthy herbaceous layer, the Louisiana pine snake's primary prey, the Baird's pocket gopher, is unlikely to sustain its population, and therefore the habitat is unlikely to sustain Louisiana pine snake populations. Additional threats which may occur even within quality Louisiana pine snake habitat include: 1) road mortality, 2) off road mortality due to all terrain vehicle use, 3) collection from the wild, and 4) the public's general dislike for snakes.

With a clutch size of 3 to 5 eggs, the Louisiana pine snake has an extremely low reproductive rate; thereby magnifying the effects of the above listed threats.

For species that are being removed from candidate status:

\_\_\_Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

## RECOMMENDED CONSERVATION MEASURES

Conservation Recommendations (Rudolph, D.C., USFS Southern Research Station, Nacogdoches, TX, pers. comm. 2005)

- Enhance existing and/or establish longleaf pine forests within historical range in Louisiana and Texas;
- Reduce/remove midstory component within pine forest stands to a level that allows maintenance by fire;
- Implement a prescribed fire program (typical 3 to 5 year intervals once the forest is in a management condition) to maintain the midstory forest component and the herbaceous layer;
- Thin timber to allow solar penetration to the ground layer thereby enhancing the herbaceous layer and pocket gopher habitat; the primary food for the Louisiana pine snake;
- Manage timber on longer rotations and for higher end products such as saw

- timber and poles;
- Limit off-road vehicular use;
- Provide conservation education to the general public, and to managers and recreational users to avoid killing or otherwise impacting snakes in the wild;
- Educate collectors and other members of the public of the rarity of the species and the need to refrain from removing species from the wild.

## LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
<b>Moderate</b> to Low	<b>Imminent</b>	Monotypic genus	7
		<b>Species</b>	<b>8*</b>
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

### Rationale for listing priority number:

#### *Magnitude:*

Most of the longleaf pine habitat of the Louisiana pine snake has been destroyed and much of the habitat that remains has been degraded for reasons discussed previously. On public lands (30% of the historic range of the Louisiana pine snake) potential Louisiana pine snake habitat is receiving increased management emphasis. Much of this land area is now being managed on longer rotations (i.e., 70+ years) where silvicultural prescriptions include smaller clearcuts, midstory removal, thinning and prescribed fire. This type of silviculture is well-suited to maintaining and/or enhancing Louisiana pine snake habitat. In contrast, the primary type of management on private lands (70% of the historic range of the Louisiana pine snake) today is intensive silviculture, and consists of clearcutting, mechanical site preparation, limited use of fire, herbicide usage, and short rotations of loblolly pine plantations resulting in habitat that is generally unsuitable for Louisiana pine snakes. The best known Louisiana pine snake habitat on private lands is currently being maintained as a core management area to benefit the Louisiana pine snake; however this management area represents only a tiny fraction of private lands within the historic range of the species. Common silvicultural practices on private lands

throughout the historical range do not promote the longleaf pine ecosystem, and therefore do not promote the needs of wildlife dependant on this ecosystem including the Louisiana pine snake. The Louisiana pine snake CCA was initiated to identify and reduce threats to the Louisiana pine snake and to conserve and enhance habitat on federal lands by protecting and enhancing known populations. It is doing this, however further improvement is our objective. Through the interest and informal involvement of private landholders, conservation is being further applied to private lands as evidenced by private landowner representation at annual Louisiana pine snake conservation meetings and their competition for, and receipt of, grants for assisting land management activities aimed at conserving the Louisiana pine snake. Through implementation of the CCA, positive steps have been made that address the declining longleaf pine ecosystem and the Louisiana pine snake within portions of the historic range. The potential effects of lesser threats are also being actively addressed through the CCA, as is evidenced by the closing of nonessential roads within the Louisiana pine snake conservation area on the Angelina National Forest in Texas. However, typical pine management on private lands coupled with the extremely low capture rates and population estimates on the best federal lands lead us to conclude that the threats to this species remain but are moderate.

*Imminence:*

As noted above in the 'Summary of Threats,' loss of quality longleaf pine habitat is, and continues to be the primary threat to this species. This threat began in the late 1800's with the harvesting of the virgin longleaf pine forest, yet with successful implementation of the conservation agreement it is today being slowed and reversed within areas where the ecosystem remains. However, the threat remains and therefore, we conclude the threats to be imminent.

Rationale for Change in Listing Priority Number: Clarification provided to us this FY on the rationale for determining the immediacy of threats states that if a threat is currently occurring, the threat is to be considered imminent. Therefore, although there is no actual change in threats over the past year, habitat loss does represent an ongoing threat to the Louisiana pine snake. Because of the changed forest management practices on some of the Federal and private land to benefit the Louisiana pine snake (through a CCA and grant money), we now consider the threats to be moderate in magnitude, and thus, we have changed the Listing Priority Number from a 5 to an 8.

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No, most of the longleaf pine habitat of the Louisiana pine snake has been destroyed and much of the remaining habitat has been degraded. Louisiana pine snake habitat loss is, however, continuing at a slower rate than in the past, and is being stabilized or reduced on federal lands. Voluntary, pro-active management actions to restore degraded habitat, reduce threats, and maintain Louisiana pine snake populations are being conducted on public lands in accordance with the 2003 CCA. Private landowners are also demonstrating interest in the 2003 CCA through their

presence and involvement at annual meetings in 2003, 2004 and 2005. Accordingly, we do not believe that emergency listing is warranted at this time.

## DESCRIPTION OF MONITORING

Surveys for the Louisiana pine snake throughout its historical range continue to be conducted by the signatories to the 2003 CCA. Results of those surveys have been, and will continue to be, discussed at annual Louisiana pine snake meetings to determine the effectiveness of the partnership embodied in the CCA in conserving the Louisiana pine snake.

A multi-entity two-year study “Census and Analysis of Louisiana Pine Snake and Baird’s Pocket Gopher Populations as a Tool for Habitat Conservation” began in August 2003. The study is designed to quantify the Louisiana pine snake and pocket gopher populations on industrial forest land in Bienville Parish, Louisiana to determine if those populations are correlated. If successful, this study could serve as a better method of indirectly monitoring Louisiana pine snake populations and provide a means to evaluate the effects of alternative forest management plans on the Louisiana pine snake. The research has been funded by a State Wildlife Grant issued by the Louisiana Department of Wildlife and Fisheries; current funding for snake research under this State grant expires in 2005. Researchers note approximately 50% variability in trapping results from 2004 and 2005 over the same areas, and emphasize the value of continuing the snake trapping effort for a third season, and perhaps a fourth and fifth year. The Memphis Zoological Society has agreed to provide funding for a third season in full; however funding beyond the third year is presently uncertain (Reichling *et al.* 2005).

The 2004 trapping season (April to September) resulted in capture of 273 snakes representing 15 species; the Louisiana pine snake accounted for approximately 4% of this capture, or 10 individuals. The 2005 trapping season (April to August) was not as productive, resulting in a total capture of 148 snakes representing 12 species; the Louisiana pine snake accounted for less than 2 % of the capture, or 2 individuals. The 2005 trapping rates were low for all species with capture rates approximately half that of the 2004 season. Researchers suspected an 11-inch rainfall deficit in the areas during 2005 contributed to low activity and the resultant low capture rates (Reichling *et al.* 2005).

Baird’s pocket gopher surveys were conducted on June 17 and 18, 2005 to determine the general level of activity within the snake trapping area. These summer surveys indicated recent pocket gopher activity was very limited within the trapping area. Researchers expect to observe increased activity in the winter months when pocket gopher surveys are scheduled for October 2005 to February 2006 (Reichling *et al.* 2005). All primary investigators for this research were present at the August 2005 Louisiana pine snake conservation meeting where they presented current research results.

## COORDINATION WITH STATES

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment: Louisiana and Texas

Indicate which State(s) did not provide any information or comments: N/A

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: /s/ Jeffrey M. Fleming 11/16/2005  
Acting Regional Director, Fish and Wildlife Service Date



Concur: \_\_\_\_\_ August 23, 2006  
Director, Fish and Wildlife Service Date

Do Not Concur: \_\_\_\_\_  
Director, Fish and Wildlife Service Date

Date of annual review: October 2005

Conducted by: Lafayette, Louisiana Field Office